

Student Guide to the NNJR Car Control Clinic

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Welcome!

Thank you for signing up for the Car Control Clinic.

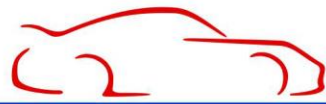
Goals

The primary goal of the Car Control Clinic is to give you have an improved sense of control behind the steering wheel. You will accomplish this by learning the fundamentals of good car control through a series of instructional exercises designed to push your limits, and maybe your car’s limits. The other goals – equally as important – are to BE SAFE and HAVE FUN!

The car control exercises are purely designed for the sake of learning. There are no timers at this event, and there are no winners or “results” of any kind. The speed of the participants’ automobiles is only important for being able to properly get something out of each exercise. For example, to properly learn braking, the car must be traveling at sufficient speed to trigger the ABS.

You will learn with an instructor in your right seat: he or she will coach you through each exercise. That said, it will be very helpful if you take the time to review each exercise described in this manual.





Basics of the Day

Before you leave home, be sure to pack

- your helmet (if you don't own one we have a few loaners),
- sun block and/or rain gear,
- lunch,
- plenty of water, and
- a chair.

NOTE: leave any items you won't need at home. All loose items must be removed from the car before you drive.

While there is no pre-event tech required (your car will be checked out at the event), be sure you

- have sufficient rubber on your tires,
- have the tires inflated to factory spec, and
- have a full tank of gas.

Plan to be at MetLife Stadium, **Lot L** no later than 8:00 AM for sign-in.

Students will be divided into two groups - AM drivers and PM drivers. While one group drives the other will work, and vice versa. The running groups will be distributed among: four different skidpads (at least one clockwise, one counter-clockwise), a braking exercise, and a slalom exercise. After completing each exercise, the group moves to the next with their instructors.

IMPORTANT: *you will get a rotation sheet at registration. It is essential that you follow it! (We hope to use 4 skidpads for 2 groups; this requires a complex rotation).*

We expect to be finished around 3:30-4:00 PM, which allows for a short lunch break.

Preparing your Car at the Event

You should take a few minutes when you first arrive to make sure that your car is prepared for the day. All floor mats should be removed, as well as any loose objects from the trunk(s), glove box, or center console. You may want to bring a large plastic garbage bag to hold everything, especially if it looks like rain.

There should not be any equipment affixed to the windshield or other glass of the car such as cameras or radar detectors.

Throughout the day, continue to take note of the car and the condition of the tires. If anything concerns you about your car, do not hesitate to discuss it with your Instructor.





Preparing Yourself

When you first sit in the car, take note of your driving position. Your arms should be able to comfortably hold the wheel at the 9 and 3 o'clock positions with a bend at the elbows. Your legs should also be able to fully depress the pedals without "locking" your knee.

Please note the importance of being smooth with the controls – the steering wheel, shifter, gas and brake. The exercises will reinforce smoothness, one of the most important aspects to improved driving, and something you should keep in mind throughout the day.

The course was designed with your safety in mind. If you are going to wiggle or spin, this is the place to do it safely! Relax and to have fun!

NOTE: if your car has Automatic Emergency Braking and/or Lane Change Assist/Lane Keeping, learn how to turn them off and do so each time you start your car during the event.

If you have an Apple Watch SE or Apple Watch Series 4 or later, leave them home or plan to turn off the Fall Detection feature (it can be triggered by rapid stops and we don't want any false calls to 911!).

Exercises

Skidpad

We will be running skidpad exercises, one session clockwise, and the other counter-clockwise. We hope to have the courses watered down by a fire truck (or mother nature). The wet pavement makes the "breakaway" speeds slower and creates much less wear and tear on the tires.

The objective is for you to feel the car at its limit of adhesion. Start by driving the car in a steady circle reasonably close to the cones, and then gradually increase speed to the point where you are steering with the throttle ONLY (i.e. no steering wheel input.) This is much harder than it sounds! As you increase your throttle input, your car will start to understeer more, and push you further from the cones (making the circle larger). As you reduce throttle input while keeping the same steering wheel angle, your line will become tighter and the circle will become smaller.

Another critical lesson in this exercise is the concept of 'ocular driving', sometimes called driving with your eyes. You should look far ahead: through the circle, half way across, if possible. Your head should be turned and remain fixed, just like your steering wheel. This illustrates how important 'looking ahead' is in driving. You will feel a greater sense of control once you have mastered these two main points of the exercise.





If the you spin, that is ok, though not the objective. You should be pushing the limits throughout these exercises, and it's a good lesson to see what the 'other side' of the limit of adhesion feels like (in a very safe environment).

The skidpad should be run in second gear, unless your gearing is not sufficient to get the car up to the necessary speed. Between runs, you and your instructor will debrief what you and your car did on the last run.

Braking

The objective of the braking exercise is to use 100% of the brakes available in your car. Most of you won't come close to fully using the brakes on the first try. If your car is equipped with ABS you should squeeze on the brakes until you feel resistance (i.e. don't jump on the pedal), then push very hard. You may be hesitant to get on the brakes fast enough, or push hard enough. Your instructor will help you overcome this. You should use the same technique if you have non-ABS brakes, except that you will have to be ready to modulate the brake pedal to avoid lockup.

There are a couple of very important aspects to this exercise. First, you will need to accelerate briskly from the start point (although it is not intended to be a drag race), and continue building speed until you approach the first turn. This first braking zone is part of the exercise as you should only slow the car enough to make the turn. Your instructor will help you not over drive this slow turn by coaching you to brake hard enough and soon enough. Instructors may also discuss the concept of the 'slow in, fast out' approach to turns.

Another important aspect to this exercise is the concept of *squeezing* the brakes – even under hard braking – rather than *stabbing* the brakes. When the brakes are applied by stabbing or stomping on them, even with an ABS car, the weight transfers almost completely to the front tires unsettling the car and reducing braking capability and overall control. However, when we use smooth but firm brake input, we achieve better weight distribution under braking and use the available contact patch of all four tires more efficiently.

Slalom

Slalom is all about using the steering wheel and **looking ahead**. You will be encouraged to start out slowly and maintain a steady, comfortable pace throughout the entire course. Instructors will focus more on form as you gain the sensation of looking ahead while correctly turning on the backside of each cone.

The goal is to cross the imaginary line between cones as early as possible to set up for the next cone and turn. The most effective way to do this is to start the turn early at the first turn in the slalom, carefully pointing the car across the middle line while almost running over the "back" of the cone being passed. We don't want to see lots of cones destroyed, so you should gradually increase speed while staying close to, but not hitting the cones.





The turnaround at the far end of the course is another ‘slow in, fast out’ turn, which is easy to miss. You will get a good feel for how your car turns and transitions when alternating inputs (left turn, then right turn) are introduced. Again, smoothness of inputs (shifting, steering, braking, and throttle) are emphasized.

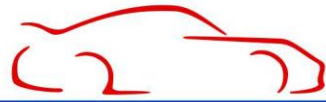
More advanced drivers participating in the Car Control Clinic may also notice, especially if they have already done one of the skidpad exercises, that the line of the car through the slalom is affected by the throttle input. More throttle will generally cause the car to understeer (push), while a throttle lift mid-corner will help the car turn and may induce some oversteer, thus reducing the amount of steering wheel input required. This ‘throttle steering’ technique should only be tried by more advanced students.

Working...and Safety

As noted above, when you aren’t driving, you will be working. Worker roles include starter, staging, flagger and cone “shagger.” Each role is critical to the safety of the event...and to keeping us on schedule. Here are important tips for each position

- Starter: the person who decides when to send the next car onto the skidpad, slalom course or braking exercise. For braking and the skidpad, the next car is sent as soon as the previous one exits. The slalom can generally handle 3 or 4 cars at a time.
 - This assumes that it is safe to send the next car! If cones have been hit and flaggers are resetting them, a pause is required.
 - Your main focus must be the cars on course to be sure that it is safe to send the next car before they are released.
 - The starter will also have a radio. It is critical to listen to the radio! That is how we communicate the end of each session; also any urgent safety issues.
- Flagger: one person at each exercise will have a yellow or red flag. It is only to be used when there is an unsafe condition. For example, one or more cone shaggers are on course with a car headed their way. Wave the flag vigorously so that the driver sees you. If you are driving and see a waved flag, slow down or stop immediately and return slowly to the starting area. However, do not overuse the flag (e.g. no need to wave the flag because a cone is down). Judgment is required with safety first; at the same time, they cause reruns which extends the schedule.
- Cone shagger: during the day, cones will be hit at every exercise. You will be spaced along the slalom and braking course and in the middle of each skidpad. If a cone is hit, wait until the car is clear, then RUN and set up the cone(s). If a car is coming, wait!





- Staging: the area used to stage for each exercise can become crowded and end up pushing cars too close to the course. For the skidpads, cars will be staged side by side. For slalom and braking there is usually room to stage in line, IF everyone moves up promptly. As a stager, you will make sure every car is staged in a safe area.

